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AUTHORS: Eckardt, A., Götr, G., Greiner, E., Kriester, A.,
Mittenbacher, J., Prager, R.

TITLE:

PERIODICAL: 1M.V. cascade-type generator for the acceleration of
protons and deuterons.

PERIODICAL: KERNENERGIE (Germany) 1962, No. 2

TEXT: The main components of the unit are: 1. Three stage cascade H.T. generator; 2. Accelerator tube and voltage divider; 3. H.F. ion source; 4. High vacuum and target systems; 5. Control, - measuring - and regulation devices. The generator employs the Cockcroft - Walton circuit, with a 560 Hz H.T. transformer (500V/175kV, 15 kVA) and commutator. The maximum voltage at zero load was limited because of corona discharges to 1M.V. At 100kV and 1mA current a voltage drop of 17,2kV and a ripple of 5kV/mA were measured. The ripple at zero load is less than 1%. It is shown theoretically that for the given H.T. transformer, condenser and load the practical optimum number of stages is three. The accelerator tube has six segments.
Card 1/3

1M.V. cascade-type generator....

ments, connected to the H.T. generator by means of voltage dividers. The ion optical system consists of six electrostatic lenses, the first lens being the last electrode of the prefocussing system and the first electrode of the accelerator tube. By varying the potential of the former between 0 to 20kV, optimal focusing of the ion beam for voltages from 100 to 1000 kV is obtained. The H.F. ion source employs a transmitter supplying 70W at 80 MHz*. The ion yield obtained is about 20 mA/W. A prefocussing system is required as the ion beam aperture at the source is $\leq 6^\circ$. A 1.5kV 50Hz* generator for supply of accessories at high potential is built into the H.T. electrode. The accelerator was tested at 850kV, with an ion current of 400mA at the target, the pressure in the tube being less than 10^{-5} Torr. For calibration some nuclear ($p\gamma$ /resonance reactions were used). There are 10 figures.

Card 2/3 * GPS

ASSOCIATION: Technisch-Physikalisches Institut der Friedrich-Schiller-Universität (Technico-Physical Institute of the Friedrich-Schiller-University, Jena)

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